What is claimed is:

1. A scanning optical system for dynamically deflecting a laser beam emitted from a light source by a deflecting system, converging the dynamically deflected laser beam by an imaging optical system into a spot beam on a scan target surface, and thereby scanning the spot beam in a main scanning direction on said scan target surface, comprising:

an optical element being placed on an optical path between said light source and said deflecting system,

said optical element including:

a central area transmitting part of the laser beam in the vicinity of a central axis of the laser beam;

at least one first outer area transmitting part of the laser beam incident on part of said optical element outside said central area while having an effect on the laser beam so that the beam after passing through said at least one first outer area will be in a first phase state which does not include a state where the beam has no phase difference relative to a beam passing through said central area; and

at least one second outer area transmitting part of the laser beam incident on part of said optical element other than said central area and said at least one first outer area while having an effect on the laser beam so that the beam after passing through said at least one second outer area will be in a second

phase state which is different from said first phase state and includes a state where the beam has no phase difference relative to the beam passing through said central area.

2. The scanning optical system according to claim 1,

wherein said at least one first outer area gives the beam passing through said at least one first outer area a first phase difference relative to the beam passing through said central area, and

wherein said at least one second outer area gives the beam passing through said at least one second outer area a second phase difference relative to the beam passing through said central area.

3. The scanning optical system according to claim 2,

wherein the first phase difference is set to θ [rad] that satisfies a condition:

$$\cos\theta \leq 0 \quad \cdots\cdots \quad (1), \text{ and}$$

wherein the second phase difference is set to θ' [rad] that satisfies a condition:

$$0.9 \leq \cos\theta' \quad \cdots\cdots \quad (2).$$

4. The scanning optical system according to claim 3,

wherein the first phase difference is set substantially equal to $(2N-1)\pi$ [rad] (N: integer), and

wherein the second phase difference is set substantially equal to $2M\pi$ [rad] (M: integer).

5. The scanning optical system according to claim 3, wherein said at least one first outer area is formed to circumscribe said central area.

6. The scanning optical system according to claim 3, wherein said at least one second outer area is formed to circumscribe said at lease one first outer area.

7. The scanning optical system according to claim 5, wherein said at least one second outer area is formed to circumscribe said at least one first outer area.

8. The scanning optical system according to claim 3, wherein said optical element includes two or more pairs of said first and second outer areas.

9. The scanning optical system according to claim 8, wherein said first outer areas and second outer areas are arranged alternately outward from said central area.

10. The scanning optical system according to claim 3, wherein a total size S' of said at least one first outer area and a size

S of a laser beam cross section orthogonal to the central axis of the laser beam satisfy a condition:

$$0.03 < S'/S < 0.3 \quad \cdots\cdots (3).$$

11. The scanning optical system according to claim 4, wherein a total size S' of said at least one first outer area and a size S of a laser beam cross section orthogonal to the central axis of the laser beam satisfy a condition:

$$0.03 < S'/S < 0.3 \quad \cdots\cdots (3).$$

12. The scanning optical system according to claim 1, wherein said optical element further includes a shading part as an aperture stop, and

wherein said at least one first outer area and said at least one second outer area are placed in an aperture of said shading part.

13. The scanning optical system according to claim 1, wherein said at least one first outer area and said at least one second outer area are arranged on both sides of said central area along said main scanning direction in order in which said at least one first outer area is arranged inside said at least one second outer area.

14. The scanning optical system according to claim 1, wherein

each of said at least one first outer area and said at least one second outer area has at least two portions which are placed symmetrically with respect to a center of said central area.

15. The scanning optical system according to claim 1, wherein said imaging optical system includes a reflecting surface.

16. A printer having a scanning optical system for dynamically deflecting a laser beam emitted from a light source by a deflecting system, converging the dynamically deflected laser beam by an imaging optical system into a spot beam on a scan target surface, and thereby scanning the spot beam in a main scanning direction on said scan target surface,

said scanning optical system including:

an optical element being placed on an optical path between said light source and said deflecting system,

said optical element including:

a central area transmitting part of the laser beam in the vicinity of a central axis of the laser beam;

at least one first outer area transmitting part of the laser beam incident on part of said optical element outside said central area while having an effect on the laser beam so that the beam after passing through said at least one first outer area will be in a first phase state which does not include a state where the beam has no phase difference relative to a beam

passing through said central area; and

at least one second outer area transmitting part of the laser beam incident on part of said optical element other than said central area and said at least one first outer area while having an effect on the laser beam so that the beam after passing through said at least one second outer area will be in a second phase state which is different from said first phase state and includes a state where the beam has no phase difference relative to the beam passing through said central area.

17. The printer according to claim 16,

wherein said at least one first outer area gives the beam passing through said at least one first outer area a first phase difference relative to the beam passing through said central area, and

wherein said at least one second outer area gives the beam passing through said at least one second outer area a second phase difference relative to the beam passing through said central area.

18. The printer according to claim 17,

wherein the first phase difference is set to θ [rad] that satisfies a condition:

$\cos \theta \leq 0$ ····· (1), and

wherein the second phase difference is set to θ' [rad]

that satisfies a condition:

$$0.9 \leq \cos\theta' \quad \cdots (2).$$

19. The printer according to claim 18,

wherein the first phase difference is set substantially equal to $(2N-1)\pi$ [rad] (N: integer), and

wherein the second phase difference is set substantially equal to $2M\pi$ [rad] (M: integer).

20. The printer according to claim 18, wherein the total size S' of said at least one first outer area and the size S of a laser beam cross section orthogonal to the central axis of the laser beam satisfy a condition:

$$0.03 < S'/S < 0.3 \quad \cdots\cdots (3).$$